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EXAMINER
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BRUENJES, CHRISTOPHER P

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 08/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/616,421

Applicant(s)

DALAL ET AL.

Examiner

Christopher P Bruenjes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-16 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20031016, 20040121.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15, drawn to an elongated hollow body, classified in class 428, subclass 36.91.
- II. Claim 16, drawn to a method making a hollow body, classified in class 264, subclass 500.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as injection molding a tubular core of chlorinated lower olefin as claimed followed by extruding an outer layer of poly(lower)olefinic outer layer onto the outer surface of the tubular core.

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2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Joe Powell on July 13, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claim 16 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Double Patenting***

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The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-2 and 6-12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/618,556. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of application '556 teach a pipe or tubing having an inner tubular core of chlorinated polyethylene contiguous with the inner surface of a cross-linked polyethylene (see claim 5). Regarding claims 1-2 and 8, the claims are read in light of the specification and the specification teaches that the chlorinated polyethylene claimed is a randomly, partially randomly chlorinated or a blocky chlorinated polyethylene (p.4, paragraph 34 teaches the make-up of the chlorinated polyethylene

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claimed). The chlorinated polyethylene has chlorine content in the range from 5 to about 50% by weight (see claim 5).

Regarding claim 6, the wall thickness of the tubular core is 0.025mm to 1.52mm (see claim 5), with the majority of the thickness of the pipe being the cross-linked polyethylene.

Regarding claim 7, the nominal diameter of the pipe is in a range from 7mm to 152mm and the wall thickness is 28 to 100 times smaller than the nominal diameter of the pipe (see claim 5). Regarding claim 9, the chlorinated polyethylene of the claims of '556 is the same composition as the instantly claimed chlorinated polyethylene so it necessarily must have the same melting temperature and have amorphous and crystalline phases.

Regarding claim 10, the outer layer makes of the substantial portion of the wall thickness so the mechanical properties of the pipe must necessarily be substantially indistinguishable from those of conventional PEX pipe, and the flexural modulus of the pipe is no more than 20% greater than the flexural modulus of PEX. Regarding claims 11 and 12, the claims of '556 also teach a three layered embodiment in which a third layer of poly(lower)olefin is directly bonded to the cross-linked polyethylene layer's outer surface (see claim 12).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Objections***

6. Claims 3, 7, 8, 12, 13 are objected to because of the following informalities. Appropriate correction is required.

Regarding claim 3, it is suggested in line 2 to add "and" between "polyolefin" and "is" to fix a grammatical error.

Regarding claim 7, in lines 2 and 3 the limitation "in the range" is repeated twice immediately following each other, this appears to be a typing error.

Applicant is advised that should claim 7 be found allowable, claim 8 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). In this case, claim 8, merely repeats the exact same limitations of claim 2, and claim 8 is dependent on claim 2 indirectly through claim 7. Therefore, claim 7 already includes all of the limitations of claim 8.

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Regarding claim 12, it is suggested that the word "further" be added between "claim 7" and "including" in line 1 so that the claim reads more clearly.

Regarding claim 13, the "an" before "tubular" in line 2 should be replaced with "a" in order to correct the grammatical error.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-12 and 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the lower olefin" in line 6. There is insufficient antecedent basis for this limitation in the claim. The limitation appears to be referring to "poly((C<sub>2</sub>-C<sub>4</sub>)olefinic" in line 2. It is suggested, if this is the case, the limitation "poly(C<sub>2</sub>-C<sub>4</sub>)olefinic" in line 2 be written "poly(lower)olefinic" in order to correct the antecedent basis issue and because it could be confusing to what C<sub>2</sub>-C<sub>4</sub> is referring.



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Regarding claim 2, the limitation "twin-layered" in line 1 renders the claim vague and indefinite, because it is not understood if "twin-layered" requires the pipe to have only two layers, if it requires that the pipe have two identical layers, or if the limitation merely requires that the pipe have at least two layers. Also the limitation "is of a polymer" in line 2 renders the claim vague and indefinite because it is not understood if "is of" is open or closed language. For definitiveness it is suggested that "is" be replaced with "comprising" or "consisting" so that it is clear if the language is open or closed.

Claim 5 recites the limitation "the polyolefin rubber" in line 1. There is insufficient antecedent basis for this limitation in the claim. The limitation appears to be referring to "poly(lower-olefin) rubber" in claim 3. Therefore, it is suggested, if this is the case, to change the limitation to read "the poly(lower-olefin) rubber". Furthermore, the limitation "about 1% to 10% by weight" in line 4 renders the claim vague and indefinite because it is not understood what this percentage amount is based on.

Regarding claims 6 and 7, the limitation "nominal diameter" renders the claim vague and indefinite because it is not

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understood if the limitation is referring to the inside or outside nominal diameter.

Regarding claim 8, the limitation "is of a polymer" in line 2 renders the claim vague and indefinite because it is not understood if "is of" is open or closed language. For definitiveness it is suggested that "is" be replaced with "comprising" or "consisting" so that it is clear if the language is open or closed.

Regarding claim 9, the limitation "is of a" in line 1 renders the claim vague and indefinite because it is not understood if "is of" is open or closed language. For definitiveness it is suggested that "is" be replaced with "comprising" or "consisting" so that it is clear if the language is open or closed.

Regarding claim 10, the limitation "substantially indistinguishable" renders the claim vague and indefinite because it is not understood to what degree something can be distinguishable from another object and still be substantially indistinguishable. Further, it is not understood if the degree of being able to distinguish included in "substantially" would include pipes that are exactly the same in most mechanical properties but completely different in a few of the mechanical

properties, or if all of the mechanical properties should be close to the same values.

Regarding claim 11, it is not understood how a twin-layered pipe is a tri-layered pipe.

Regarding claim 14, the limitation "the group consisting of a lower polyolefin and vinyl acetate having an active stub" renders the claim vague and indefinite because it is not understood if the Markush group claimed includes a lower polyolefin and a vinyl acetate having an active stub or a lower polyolefin having an active stub and a vinyl acetate having an active stub.

Regarding claim 15, the claim is currently dependent on claim 13, but appears to be referring to claim 14. There is not antecedent basis for the limitations "the lower polyolefin" in line 1, and "the active stub" in line 3, because both of these limitations were described in claim 14 and not claim 13. Also, the limitation "extrudable polymer" in line 3 renders the claim vague and indefinite because the Markush group of choices for the extrudable polymer does not include polymers only monomers for grafting. The first "is selected from the group consisting of" has only one choice, which is the "extrudable polymer" and should not be claimed in a Markush group because there are no choices. The second Markush group lists the choices in the

alternative by using "or" in line 5. However, lists of choices in a Markush group must be grouped by "and" not "or". Also, the limitation "(LLDPE, MDPE, or HDPE)" renders the claim vague and indefinite because it is not understood, especially with regard to the parenthesis, if the lower polyolefin is limited to LLDPE, MDPE, or HDPE, or if these or optional polyethylenes that could be chosen as the polyethylene forming the lower polyolefin.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 3, 6, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Arakawa et al (USPN 5,308,695).

Arakawa et al anticipate an elongated hollow body of arbitrary length and cross-section (reference number A, Figure 8). The body comprises an inner layer (reference number 1, Figure 1) representing the tubular core being coextensive with essentially the entire length of the body and an outer layer (reference number 2, Figure 1) bonded to the tubular core. The tubular core comprises a chlorinated lower polyolefin that has a

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block type chlorinated polyethylene segment and a random chlorinated polyethylene segment (col.2, 1.30-33). The second layer comprises polyethylene and/or polypropylene (col.3, 1.14-16). Regarding claim 3, the first layer is further taught to be a combination of the chlorinated lower polyolefin and a polyolefin type elastomer having a polyethylene segment and an ethylene propylene diene monomer segment (col.2, 1.12-17 and 33-34). Regarding claim 6, the thickness of the two layers combined is in the range from 0.01mm to 1mm and the thickness ratio of the first layer to the second layer is generally 1:1 to 1:1000 (col.3, 1.42-48). Therefore, a number of the embodiments taught within the ranges claimed anticipate the thickness range of the tubular core layer claimed. Regarding claim 13, the claim has the same limitations as claim 1 plus an intermediate polymeric adhesive layer between the first and second layer. Arakawa et al teach all of the limitations of claim 1 as shown above and teach that the respective layers are laminated with adhesives (col.4, 1.44-47). Therefore, Arakawa et al at least inherently teach an adhesive polymeric layer between the first and second layer.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
9. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cinadr et al (USPN 6,124,406) in view of Gebizlioglu (USPN 6,287,657).

Cinadr et al teach an elongated hollow body of arbitrary length and cross-section such as a pipe or tubing (col.3, 1.9-11). The hollow body comprises a tubular core being coextensive with essentially the entire length of the body, since it is the only known layer forming the tubing or pipe. The tubular core comprises a chlorinated lower polyolefin, specifically a blocky

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chlorinated polyolefin (see abstract). The chlorine content of the tubular core is in the range from 10 to about 50% by weight (col.5, 1.15-20). Regarding claim 3, the chlorinated lower polyolefin is a blocky chlorinated polyolefin and is present in a major proportion by weight relative to a blending ingredient in the blocky chlorinated polyolefin. Specifically, the tubular core comprises from about 0.5 to about 10 parts by weight of the blocky chlorinated polyolefin and 1 to about 10 parts by weight of a polyolefin elastomer (col.6, 1.60-66), which is a blending ingredient. In at least some of the embodiments suggested by these ranges the blocky chlorinated polyolefin is a major proportion by weight relative to a blending ingredient in the form of a polyolefin elastomer. Note the limitation "major proportion by weight relative to a blending ingredient" does not require that the blocky chlorinated polyolefin make up the major proportion of the entire layer, but only that is a larger portion than a blending ingredient. In this case, the blocky chlorinated polyolefin makes up a larger percentage of the layer than the polyolefin elastomer, which is a blending ingredient. Regarding claim 4, the polyolefin elastomer forming the blending ingredient is present in the tubular core in an amount in the range between 1 to 10% by weight based on the combined weight of compounds in the tubular core. Regarding claim 5, the

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polyolefin elastomer is selected from ethylene-propylene rubber, ethylene-butene rubber, and ethylene-propylene-diene rubber (col.6, 1.6-30).

Cinadr et al teach that the pipe is formed of a material comprising chlorinated polyolefin as shown above, but fail to teach forming the pipe as a multi-layered pipe. However, Gebizlioglu teaches that chlorinated polyolefins such as PVDC have low permeability coefficient and may be flexible and strong enough to be used in making pipes, but are expensive to be used to form single-layered pipes (col.4, 1.39-45). Gebizlioglu further teaches that low density polyethylene, which is a poly(lower) olefinic having 2 carbon atoms, is bonded to the outer surface of the tubular core layer of chlorinated polyolefin in order to make a pipe having the sufficient permeability properties of the chlorinated polyolefin while decreasing the cost by using a less expensive plastic for the majority of the pipe construction (col.4, 1.50-64). One of ordinary skill in the art at the time Applicant's invention was made would have recognized that an outer layer of polyethylene having a substantially larger thickness than the tubular core is added to a pipe having a chlorinated polyolefin tubular core in order to decrease the cost of forming the pipe compared to the same pipe made only from chlorinated polyolefin without



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sacrificing the properties of the pipe, as taught by Gebizlioglu.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to add an outer layer of polyethylene to the pipe of Cinadr et al in order to decrease the cost of forming the pipe, as taught by Gebizlioglu.

Regarding claim 6, Gebizlioglu teaches that the thickness of the tubular core layer is substantially less than the polyethylene layer. Gebizlioglu also teaches that the thickness of the tubular core layer is selected depending on the required water vapor transmission rate for a given surface area (col.5, 1.4-8). Although Gebizlioglu teaches an approximate preferred thickness of 1/16 of an inch, this thickness is not a definite requirement and it is suggested by the other teachings of Gebizlioglu that the actual thickness would be chosen with consideration given the cost of the materials and the water vapor transmission rates required of the pipe. Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select the thickness of the tubular core layer within the range of 0.025mm and 0.5mm depending on the required water vapor transmission rate and the consideration of expense, as taught by Gebizlioglu.

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10. Claims 2, and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cinadr et al in view of Gebizlioglu as applied to claim 1 above, and further in view of Doi et al (USPN 4,351,876).

Cinadr et al and Gebizlioglu teach all that is claimed in claim 1 as shown above. Regarding claim 7, Gebizlioglu teach that the composite pipe has a nominal diameter in the range from about 1 to 1.5 inches, and a wall thickness of 0.5 inches (col.4, 1.55-60). Regarding claim 9, Cinadr et al also teach that the blocky chlorinated polyethylene has a melting temperature in the range from about 110°C to about 140°C (col.2, 1.19-20) and has an amorphous phase and a crystalline phase (col.2, 1.32-36) and a chlorinated polyethylene contains from about 15% to about 50% bound chlorine, based on the weight of the chlorinated polyethylene (col.2, 1.14-16). Regarding claim 10, Gebizlioglu teach that the large majority of the thickness of the pipe comprises the polyethylene. Therefore, the mechanical properties of the pipe would be substantially indistinguishable from those of pipes made only from polyethylene, and the flexural modulus of the pipe is no more than 20% greater than the flexural modulus of a pipe form only from polyethylene.

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Cinadr et al and Gebizlioglu taken as a whole fail to teach that the outer layer is formed of a cross-linked polyethylene. However, Doi et al teach that cross-linked polyethylene is substituted for uncross-linked polyethylene in order to provide the polyethylene with improved heat resistance (col.1, 1.8-24). Doi et al teach that it is well known in the art of tubular forms formed of laminates having a chlorinated polyethylene such as PVC or PVDC (col.3, 1.20-28) bonded to an outer layer of polyethylene that the polyethylene should be cross-linked in order to increase heat resistance especially when the tubular body is to be used in severe conditions. One of ordinary skill in the art would have recognized that all three references are analogous insofar as they are all concerned with pipes and tubing formed using chlorinated polyethylenes such as PVC or PVDC.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute cross-linked polyethylene for the polyethylene outer layer of Cinadr et al and Gebizlioglu combined, in order to improve the heat resistance of the outer layer, as taught by Doi et al, which would be important depending on the final intended use of the tubular body.

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Regarding claims 11-12, Doi et al further teach that it is well known in the art to stack multiple layers of cross-linked polyethylene into the same laminate for forming a tubular body depending on the intended end result of the article (col.4, 1.26-51 and Figures 1-4). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to add multiple layers of cross-linked polyethylene to the pipe of Cinadr et al, Gebizlioglu, and Doi et al depending on the intended end result of the pipe, as taught by Doi et al.

Regarding claim 13, note that claim 13 includes all of the limitations of claim 1 and the only added limitation from claim 1 is that an intermediate layer of polymeric adhesive material is present between the tubular core and outer layer. Cinadr et al and Gebizlioglu taken as a whole teach all of the limitations of claim 1, but Gebizlioglu, specifically, fails to teach how the chlorinated polyethylene layer and the outer polyethylene layer bonded to each other. However, Doi et al teach that it is well known in the art of forming multi-layered pipes having PVC or PVDC layers and polyethylene outer layers to use an adhesive between the two layers (col.3, 1.35-38). One of ordinary skill in the art would have recognized that adhesives are placed between tubular core layers comprising PVC or PVDC and outer

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layers formed of polyethylene in order to construct a sufficient bond between the layers when forming the tubular body, as taught by Doi et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to use an adhesive to join the chlorinated polyethylene tubular layer and the outer polyethylene layer of the tubular body taught by the combination of the teachings of Cinadr et al and Gebizlioglu, in order to create a sufficient bond between the layers when forming the tubular body, as taught by Doi et al.

11. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cinadr et al in view of Gebizlioglu and Doi et al as applied to claim 13 above, and further in view of Bushi et al (USPN 6,293,311).

Cinadr et al, Gebizlioglu, and Doi et al taken as a whole teach all that is claimed in claim 13 as shown above, but fail to explicitly teach the composition of the adhesive layer. However, Bushi et al teach that suitable adhesives for use with chlorinated polyolefins such as PVC or CPVC are polyethylene copolymers formed of polyethylene, which is a lower polyolefin, and maleic anhydride (col.5, 1.28-31 and col.6, 1.5-11). One of

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ordinary skill in the art would have recognized that maleic anhydride grafted polyethylene is a well known adhesive for use with bonding chlorinated polyolefins such as PVC or CPVC, as taught by Bushi et al. Furthermore, one of ordinary skill in the art would have recognized that all four references are analogous insofar as they are all concerned with forming tubular bodies containing chlorinated polyolefins such as PVC, PVDC, or CPVC.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select maleic anhydride grafted polyethylene as the adhesive used to bond the chlorinated polyethylene layer and cross-linked polyethylene layers of the tubular body formed by the teachings Cinadr et al, Gebizlioglu, and Doi et al depending on the intended end result of the article, since it is an adhesive that is well known in the art for bonding chlorinated polyolefin such as PVC or CPVC, as taught by Bushi et al.

### **Conclusion**

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hane et al (USPN 4,559,973; Pfleger (USPN 5,792,532); Siour et al (US 2001/0008663 A1).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Bruenjes whose telephone number is 571-272-1489. The examiner can normally be reached on Monday thru Friday from 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher P Bruenjes  
Examiner  
Art Unit 1772

CPB  
CPB  
August 11, 2005

  
HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
1772

8/15/05